

WHAT IS CLAIMED IS:

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1. A method for manufacturing a semiconductor device comprising the steps of:
forming an interlayer insulator comprising at least upper and lower layers,
each comprising different dry etching characteristics;
etching the upper layer of the interlayer insulator using a first mask,
wherein the lower layer of the interlayer insulator is used as an etching
stopper; forming a second mask to cover a portion of the lower layer of the interlayer
insulator, which is exposed by the etching step; and
selectively etching the lower layer of the interlayer insulator using the second
mask to form a contact hole.
2. A method for manufacturing a semiconductor device comprising at least one
thin film transistor comprising the steps of:
forming a first conductive film on a gate insulating film;
patterning the first conductive film to form a gate electrode;
forming an interlayer insulator comprising at least two layers on the gate
insulating film;
removing a part of an upper layer of the interlayer insulator, the part being
located over at least one of a source region and a drain region;
forming a contact hole through the interlayer insulator to reach at least one of
the source region and the drain region;
forming a second conductive film;
patterning the second conductive film to form a pixel electrode; forming a
third conductive film; and
patterning the third conductive film to form at least one of a source electrode
and a drain electrode, which is in electrical contact with the pixel electrode.
3. A method for manufacturing a semiconductor device comprising at least one
thin film transistor, comprising the steps of:
forming a first conductive film comprising aluminum on a gate insulating
film;
patterning the first conductive film for forming a gate electrode;

forming an interlayer insulator comprising at least two layers on said gate insulating film;

removing a part of an upper layer of the interlayer insulator, the part being located over at least one of a source region and a drain region;

forming a contact hole through the interlayer insulator to reach at least one of the source region and the drain region;

forming a second conductive film;

patterning the second conductive film for forming a pixel electrode;

forming a third conductive film; and

patterning the third conductive film for forming at least one of a source electrode and a drain electrode, which is in electrical contact with said pixel electrode.

4. A method for manufacturing a semiconductor device comprising at least one thin film transistor, comprising the steps of:

forming a first conductive film on a gate insulating film; patterning the first conductive film to form a gate electrode; forming an interlayer insulator comprising at least two layers on said gate insulating film;

removing a part of an upper layer of the interlayer insulator, the part being located over at least one of a source region and a drain region;

forming a contact hole to reach at least one of the source region and the drain region;

forming a second conductive film;

patterning the second conductive film to form a pixel electrode; forming a third conductive film; and

patterning the third conductive film to form at least one of a source electrode and a drain electrode, which is in electrical contact with said pixel electrode,

wherein the contact hole is formed smaller than the part.

5. A method for manufacturing a semiconductor device comprising at least one thin film transistor comprising the steps of:

forming a first conductive film on a gate insulating film; patterning the first conductive film to form a gate electrode; forming an interlayer insulator on the gate insulating film;

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removing a part of the interlayer insulator, the part being located over at least one of a source region and a drain region;
forming a contact hole through the interlayer insulator to reach at least one of the source region and the drain region;
forming a second conductive film;
patterning the second conductive film to form a pixel electrode; forming a third conductive film; and
patterning the third conductive film to form at least one of a source electrode and a drain electrode, which is in electrical contact with the pixel electrode.

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6. The method according to claim 1 wherein the upper layer comprises silicon oxide and the lower layer comprises silicon nitride.

7. The method according to claim 2 wherein the interlayer insulator comprises at least one of silicon oxide film and silicon nitride film.

8. The method according to claim 3 wherein the interlayer insulator comprises at least one of silicon oxide film and silicon nitride film.

9. The method according to claim 4 wherein the interlayer insulator comprises at least one of silicon oxide film and silicon nitride film.

10. The method according to claim 5 wherein the interlayer insulator comprises at least one of silicon oxide film and silicon nitride film.

11. The method according to claim 2 wherein the pixel electrode comprises indium tin oxide.

12. The method according to claim 3 wherein the pixel electrode comprises indium tin oxide.

13. The method according to claim 4 wherein the pixel electrode comprises indium tin oxide.

14. The method according to claim 5 wherein the pixel electrode comprises indium tin oxide.

15. The method according to claim 2 wherein the gate electrode is anodized.

16. The method according to claim 3 wherein the gate electrode is anodized.

17. The method according to claim 4 wherein the gate electrode is anodized.

18. The method according to claim 5 wherein the gate electrode is anodized.

19. The method according to claim 1 wherein the semiconductor device is a liquid crystal display device.

20. The method according to claim 2 wherein the semiconductor device is a liquid crystal display device.

21. The method according to claim 3 wherein the semiconductor device is a liquid crystal display device.

22. The method according to claim 4 wherein the semiconductor device is a liquid crystal display device.

23. The method according to claim 5 wherein the semiconductor device is a liquid crystal display device.